

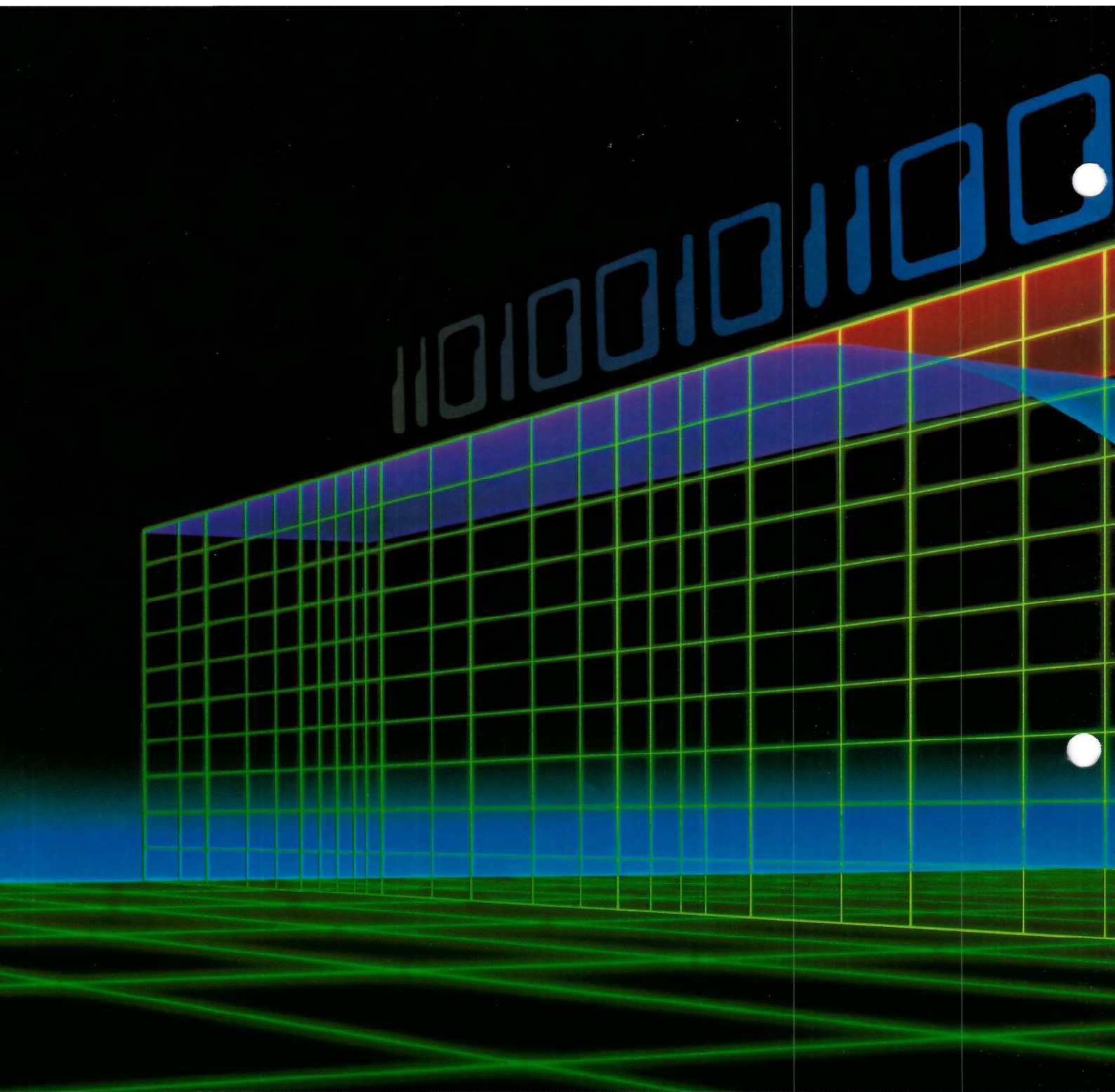
AIWA

Simply Advanced

Cassette Decks



AIWA[®]
AIWA AMERICA INC.



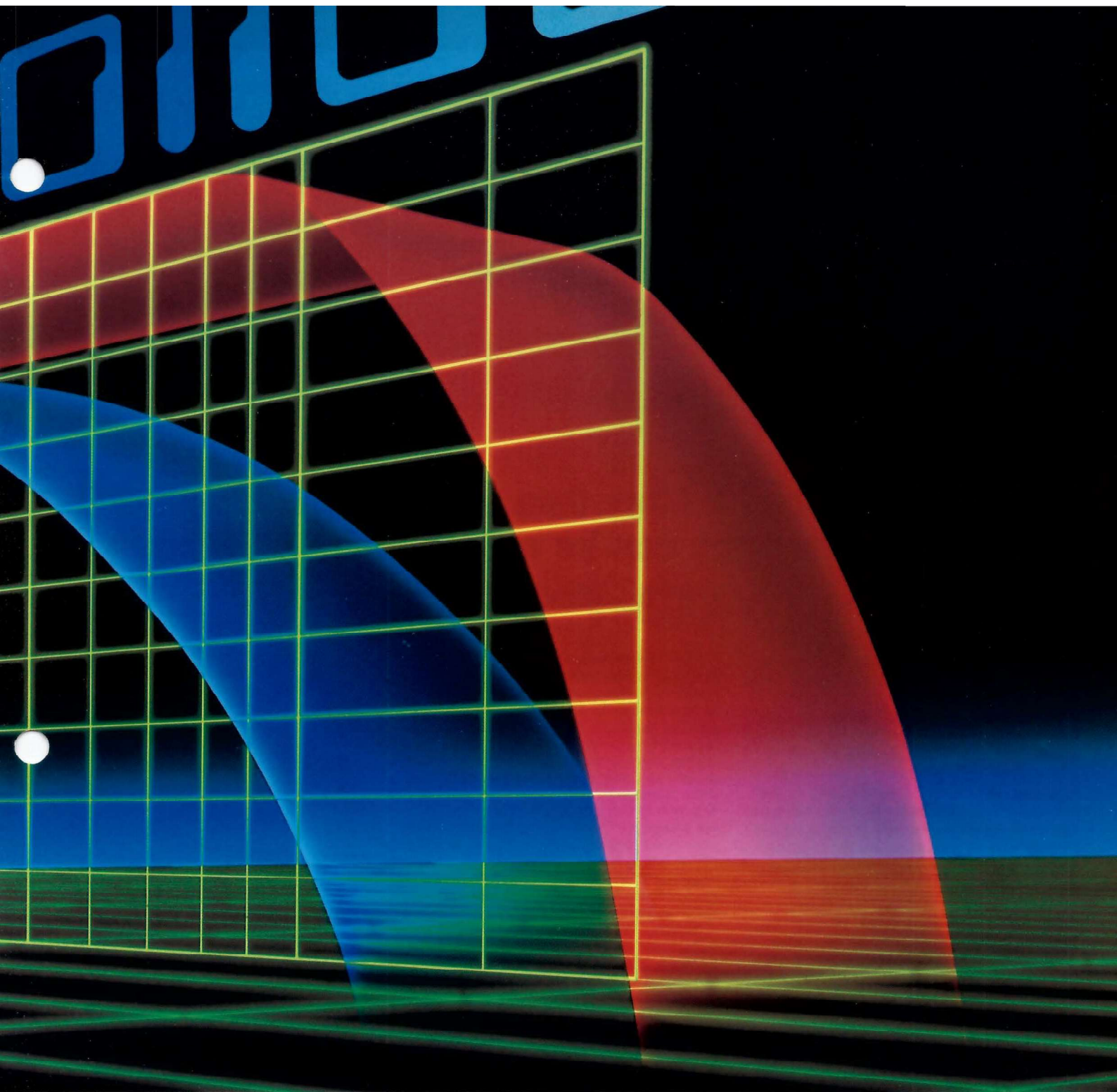
AIWA meets the challenge of

AIWA presents the new standard of excellence in cassette performance: Digital-ready is just the beginning.

Will the emergence of digitally-encoded music make your analog cassette deck obsolete? Not if it's an AIWA. Japan's first manufacturer of compact cassette recorders and

stereo cassette decks, AIWA now introduces the world's first cassette decks designed to meet the demands of all types of program material, whether digital or analog. How? Through the use of "Dolby HX Professional", a newly-developed servo circuit which ensures that recorded signals receive the ideal

amount of bias at all volume and frequency levels. Superior audio performance is of course, more than simply incorporating one or a few innovations. For over 15 years, AIWA cassette decks have been evolving—through steady improvements in materials, mechanical design, electronics and



digital

human engineering—towards the pinnacle of performance.

Dolby HX Professional is just the beginning, these are superlative

micro-grain dual capstan transports;

AIWA's exclusive D.A.T.A. and Auto-demagnetizing system; Amorphous

alloy combination head; and exciting new "user-friendly" keyboard controls.

These and other advancements are exemplified by the top-of-the-line AD-F990—unquestionably the most revolutionary, thoroughly automated cassette deck ever offered. What's more many of the outstanding features of AIWA's best 3-head models are offered at more economical cost in handsome, functional 2-head

machines.

Distinctive design; superb performance: it's the formula you'll find throughout the AIWA cassette deck lineup.



“Simply Advanced”: More than a catchword, it’s proof that perfect recordings can be made almost effortlessly!

AD-F990U

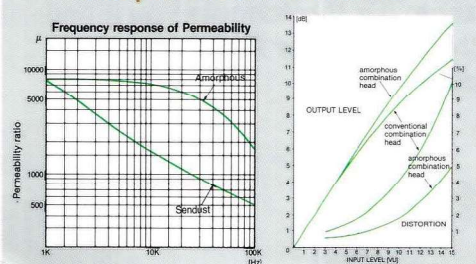
When working out the design for what was to become the most advanced AIWA deck ever produced, engineers began with a fundamental question: “What features,” they asked, “can be built in to give users a deck not only with unmatched sound fidelity, but with genuinely automated, failproof operation?” The AD-F990 is the answer. Unquestionably the most superlative performance ever offered in a model of this type, it also features thoughtful human engineering and unprecedented ease of operation.

Amorphous Combination Head

The AD-F990 introduces a newly developed head which promises to surpass almost every previous standard of top performance. Unlike most metals which have a uniform atomic configuration, amorphous alloy is a new non-crystalline material with non-specific, non-directional atomic configuration. When utilized as head material, it is able to display such ideal characteristics as a high maximum magnetic flux density, outstanding signal linearity (due to lower coercivity), and minimal generation of electromagnetic noise. Add to this a remarkable hardness for extra durability, and you can understand why AIWA engineers are so excited over the potential of this new material!



Amorphous head characteristics



Dolby HX Professional: A revolutionary new approach to the problems of recording bias

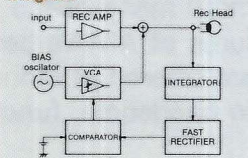
Not noise reduction but an entirely new way of processing signals, this newly-developed circuitry functions during all recordings but requires no processing during playback. For this reason, whether cassettes are recorded with or without Dolby noise reduction you'll have the advantage of full playback compatibility in any type of cassette equipment.

HX stands for “Headroom Extension”, and it operates during recording by means of a special circuit which dynamically adjusts bias levels in response to the input signals. This contributes to significant improvements in dynamic range, while at the same time making possible a naturally “flat” response in the upper frequencies.

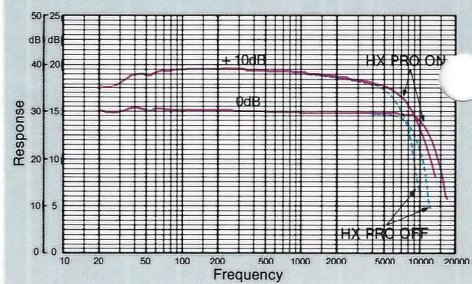
Because the bias level is fixed in conventional cassette decks, they are inevitably handicapped by the phenomena of “self bias” and mutual bias”, resulting in inability to accurately reproduce high frequency signals above a certain volume level. Dolby HX Professional has been specifically designed to deal with this problem. By use of a servo circuit which functions independently in right and left stereo channels during recording, AIWA's new decks can ensure that ideal bias levels are applied at all times. Because this contributes to reducing easily-incurred high frequency tape saturation, you'll be amazed at the clarity and absence of distortion; a definite difference.

If you plan to make tapes from digital program sources, AIWA's decks are also designed to take optimum advantage of the increased recording headroom offered by Dolby C noise reduction. Results of recordings in this mode are truly superb: with metal tape, the AD-F990 boasts a frequency response of 20 to 21,000Hz (± 3 dB), with signal/noise an outstanding 80dB (above 5kHz).

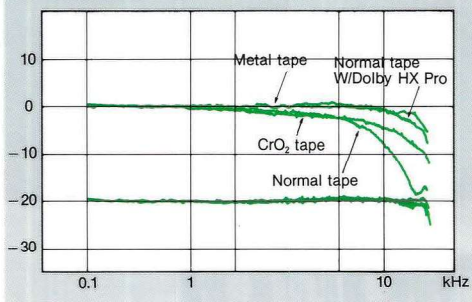
Dolby HX Professional Block Diagram



Frequency response

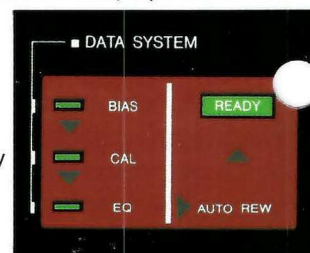


Dolby HX Professional characteristics



DATA (Digital Automatic Tape Adaptation) system

This sophisticated microcomputerized circuit automatically “tests” each tape prior to recording and adjusts the deck's bias, equalization and sensitivity to optimum levels. Performed automatically within 16 seconds, DATA ensures that virtually any brand of tape you select can deliver its best performance.



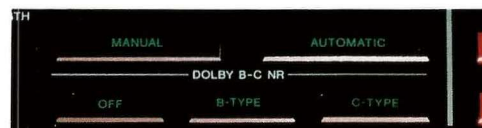
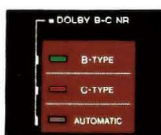
New Automated features



Auto Noise Reduction Detector

"Was that tape recorded by Dolby B or C?" "Did I use noise reduction when I made that recording?" Questions such as these are completely unnecessary with the AD-F990.

As long as you play a tape recorded by the same machine it will switch to the correct NR setting automatically!



Auto Recording Level Control

This feature completely does away with the need for time-consuming manual adjustment of recording input levels. When recording begins, level is set to the ideal point for the type of tape in use, ensuring optimum recording results.

Manual override is available for fadeout, special effects, etc.)

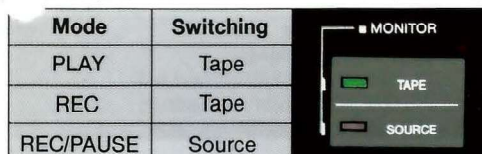


New! Flat "Keyboard" control panel

A triumph of human engineering, AIWA's design combines the convenience of front loading with the concept of "user-friendly" operation now widely popularized by personal computers. Feather-touch IC logic controls and the record level adjuster are arranged on a flat keyboard panel at the base of the unit. New design ends awkward pushing and poking of inconveniently-angled controls to make operation a real pleasure.

Auto Tape-Source Selector

Three-head cassette decks ordinarily require manual switching between TAPE (to hear the recording while in progress), or SOURCE (to monitor the sound from turntable, tuner, etc. being recorded by the deck). But if, for example, a conventional 3-head deck is set to the TAPE setting while in the RECORD/PAUSE mode, no sound will be audible from the system's loudspeakers. AIWA has equipped the AD-F990 with a new circuit which automatically switches the TAPE/SOURCE selector to the user-preferred position (manual override is of course possible).



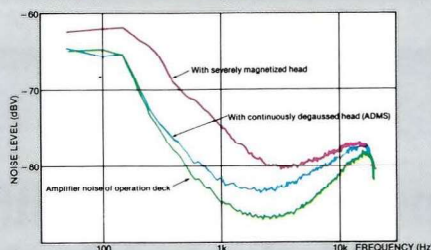
ADMS (Auto De-magnetizing System)

This fully automatic system eliminates the need for awkward de-magnetizer tools or accessories forever. Each time the unit's power is turned on, a special oscillator circuit "sweeps" the record/playback heads clean of residual magnetization in less than two seconds.

By keeping the heads in a continually degaussed condition, low noise, low distortion and optimum frequency response are ensured at all times.



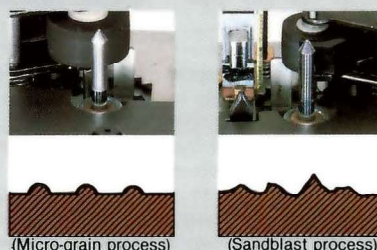
Effect of ADMS operation (Playback noise analysis)



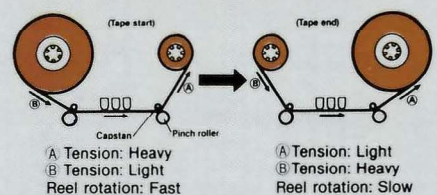
Micro-grain dual capstan transport

An exclusive process which coats the capstan surface with millions of uniform hemispheric domes, AIWA's micro-grain design ensures ideal cohesion between tape, capstans and pinch roller. This virtually eliminates the effects of changes in tape load, reducing modulation noise and resulting in exceptionally low levels of wow & flutter.

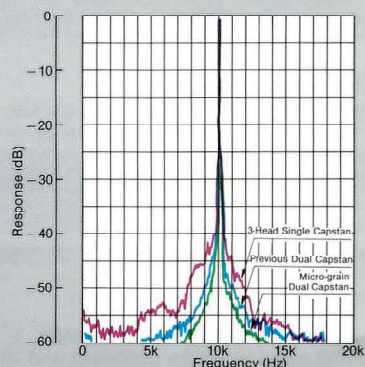
Simulated magnification of capstan surface



Micro-grain surface eliminates effects of constantly-changing tape load during play.



Modulation Noise Characteristics



Intro-play facility

Intro-play is an automatic system which searches out the start of each successive recorded tune; it then gives the listener an 8-second sampling of the contents and continues by fast forward to the next. To hear the entire tune, simply touch the PLAY mode at any time during the eight seconds and normal playback will continue. Intro-play functions in both forward and reverse directions.



All-mode tape remaining time display

Unlike previous time display counters which functioned only in the normal tape speed modes (PLAY/REC), AIWA deck counters retain precise location of the tape even during Fast Forward and Rewind.

This means that remaining tape time countdown will be displayed accurately regardless of tape length or changes in transport mode.



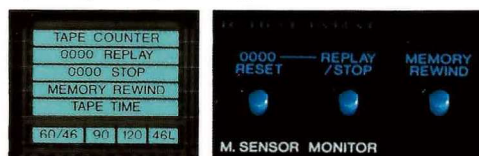
Fluorescent Multi-function Display

In addition to eye-catching peak meter display with a wide -20 to +10dB range, the integrated panel includes easy-to-read indicators for length of tape in use, remaining tape time/tape counter function, memory rewind and recommended maximum peak level for each type of tape.



Memory Rewind and Repeat System

This allows repeat playback of any preselected tape segment you designate.



Plus:

- Feather-touch electronic volume control with position indicator
- Intro-play track preview
- ADMS (Auto De-magnetizing System)
- Fluorescent multi-function display with peak hold
- Microphone jacks (rear panel)
- Auto Rec-mute
- Auto tape selector
- 1-program music sensor
- Remote control connection jack
- Switchable MPX filter (rear panel)



Stunning three-head performance, with an unmatched array of sophisticated features

AD-F770U

Offering most of the features incorporated in the AD-F990, this sophisticated 3-head deck's Dolby HX Professional and DATA circuitry ensure sound reproduction that outrivals any other model in its class. From the all-new flat "keyboard" control panel to the unique All-mode remaining tape time display, the AD-F770 is the kind of machine you can depend on for the best in cassette performance.

DATA (Digital Automatic Tape Adaptation)

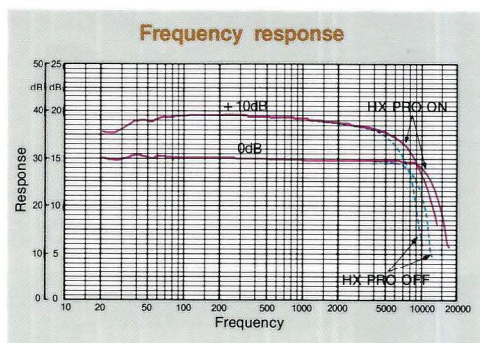
Is your deck prevented from delivering its best performance with the tape you want to use? The fact is that only a deck like the AD-F770 can ensure ideal matching with every tape brand and formulation. DATA, AIWA's sophisticated built-in microcomputer system, "tests" each tape prior to recording and automatically

adjusts bias, equalization and sensitivity to ideal levels—in only 16 seconds! Perfect tape compatibility is your assurance of perfect recordings—on any tape.



Dolby HX Professional

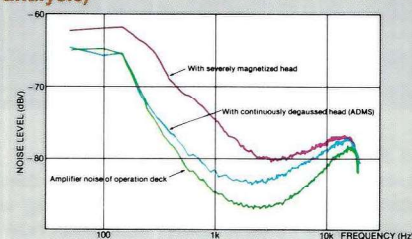
Designed to raise cassette deck performance to the demanding levels required for digital audio sources, this circuitry provides high frequency signals with the ideal bias levels by servo control which automatically functions in response to self-bias and mutual bias levels. And absolutely no encoding is needed for playback, so you can enjoy these tapes anywhere!



original Auto De-magnetizing System (ADMS). This built-in oscillator circuitry functions in a matter of seconds to remove residual magnetic buildup from the heads each time the unit's power is turned on.



Effect of ADMS operation (Playback noise analysis)



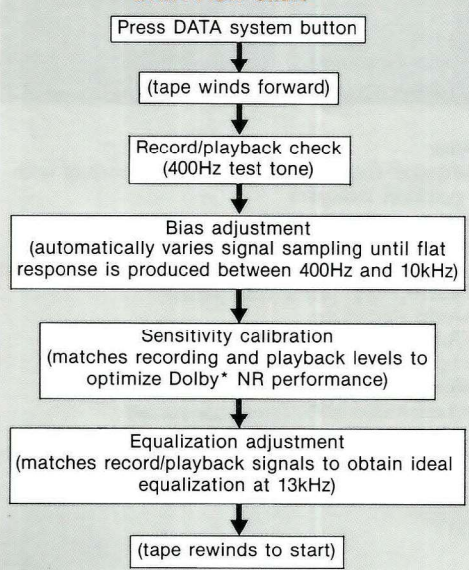
Micro-grain Dual Capstan System

As a cassette plays from start to end, tape is constantly subjected to changes in winding torque due to increasing load on the take-up reel, and this can have a detrimental effect on the quality of playback signals. AIWA's exclusive Micro-grain dual capstans provide more positive cohesion between tape, capstan and pinch roller, thus minimizing modulation noise and resulting in exceptionally low levels of wow & flutter—an inaudible 0.025% (WRMS)

Plus:

- Fluorescent multi-function display with peak hold
- All-mode tape remaining time display
- Dolby B/C noise reduction
- Intro-play track preview
- Memory rewind and repeat system
- Auto Rec-mute
- Auto tape selector
- 1-program music sensor
- Timer standby recording/playback
- Switchable MPX filter (rear panel)
- Remote control connection jack
- Stereo microphone inputs

DATA Flow Chart



DX Combination Head

Designed for extra protection from uneven wear, the DX head employs a special laminated configuration of ultra-hard permalloy chips and epoxy resin. High flux density and superb signal linearity compliment the low-noise construction.



ADMS

An essential part of head maintenance, degaussing used to be an awkward and time-consuming chore until AIWA introduced its



**Astonishing high-fidelity reproduction and deluxe features—
now more affordable than ever before!**

AD-F660U

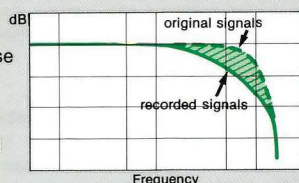
If the AD-F990 and AD-F770 didn't exist, there would still be an AIWA deck rated at the very top in terms of 3-head performance: the AD-F660. Incorporating Dolby HX Professional circuitry for audibly better high-frequency reproduction, this superbly-designed deck has the capability to handle even the most demanding digital program material with flawless fidelity.

How Dolby HX Professional automatically ensures better recordings

Not noise reduction but a completely new type of circuit, this system extends the recording headroom of high-volume, high-frequency signals—exactly what those other decks without this feature are unable to record. This is accomplished by servo control which automatically functions in response to self-bias and mutual bias levels. It's easy to use, because it operates during all recordings. You'll appreciate what it does for your cassettes too; they'll sound better played back in any unit—even a car player or portable—because there's no problem or noise reduction incompatibility!

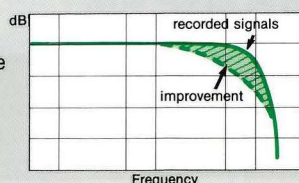
Deck with fixed bias

High-volume signals are not recorded because high frequency causes MOL to exceed permissible level



AIWA AD-F660

Dolby HX decreases bias in response to signal input, so high-volume signals can be accurately reproduced



DX Combination Head

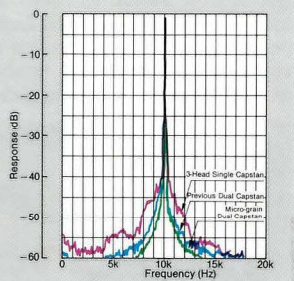
A new formulation combining laminated chips of ultra-hard permalloy with epoxy resin, the DX head offers superior linearity along with improved resistance to saturation and heat buildup. Whether for recording on high-MOL metal tapes or ordinary oxide varieties, the combination Rec/PB head utilized in the AD-F660 ensures wide dynamic range, low noise and minimal contour effect.



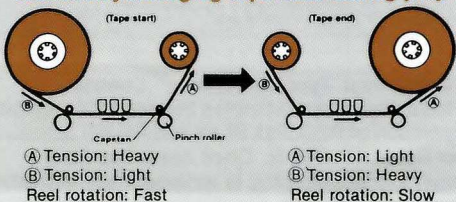
Micro-grain Dual Capstan System

AIWA's original dual Micro-grain capstans, made by an exclusive process which coats the capstan surface with microscopic hemispheric domes (designed to impart ideal cohesion with the tape surface), has been combined with an improved 2-motor drive system for even lower wow & flutter: an unprecedented 0.028% (WRMS).

Modulation Noise Characteristics

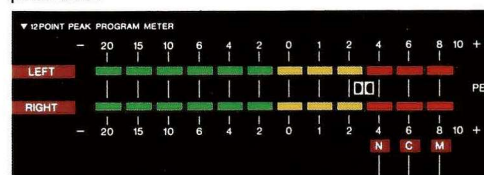


Micro-grain surface eliminates effects of constantly-changing tape load during play.



LED Peak Meter Display

Arranged in two rows of 12 LEDs each, the Peak meters feature a wide -20 to +10dB range for precise control over input levels. Three-color sequence changes from green to amber at 0dB, amber to red at 4dB to provide visual warning of approaching tape saturation levels. A 3-second peak hold is also provided.



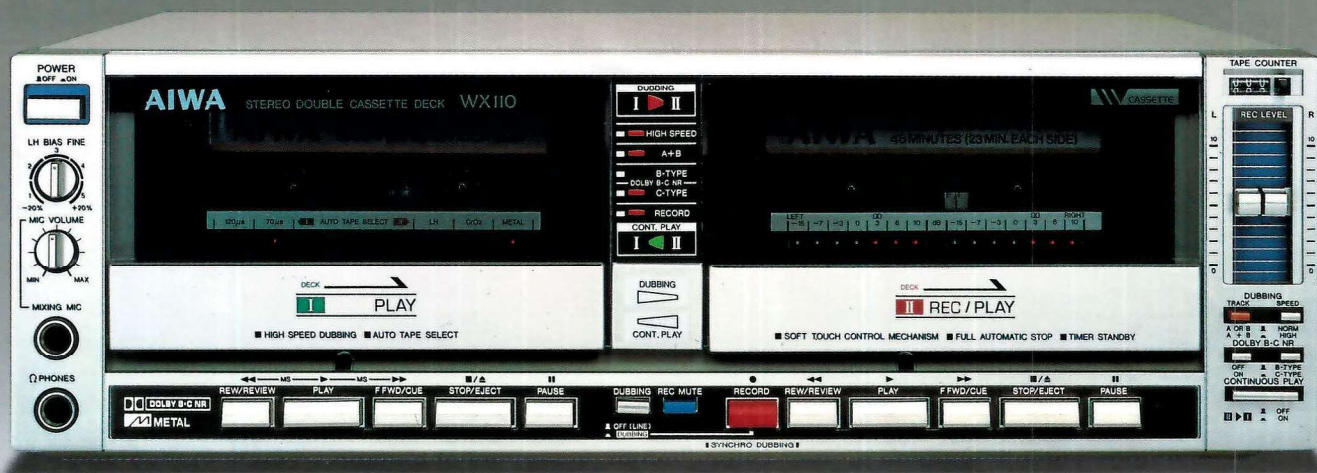
Bias Fine Adjustor

To ensure optimum response from the wide variety of Normal and CrO₂ tape varieties available, recording bias may be increased or lowered by up to 20%.



Plus:

- All-mode tape remaining time display
- Auto rec-mute
- Intro-play facility
- Dolby B/C noise reduction systems
- ADMS (Automatic De-magnetizing System)
- Auto tape selector
- Wireless remote control connection terminal
- Memory rewind and repeat system
- Stereo microphone jacks (rear panel)
- Switchable MPX filter (rear panel)
- Headphone output level selector switch (rear panel)
- Timer standby recording/playback



The outperformer: it dubs both sides at twice the speed...all at once.

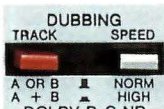
AD-WX110U

The AD-WX110 is two decks in one—but much more than what you'd get from two separate decks. In addition to saving space it saves you time as well, because it's capable of dubbing cassettes in one-fourth the time of conventional units.

ALL-TRACK RECORDING: A new, time-saving way to dub cassettes

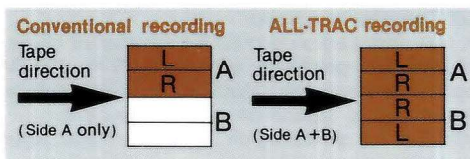
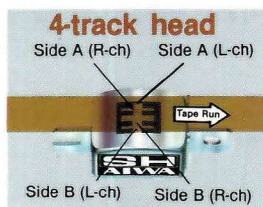
Double-speed dubbing of both tape sides

To copy from one cassette to another, you used to need two separate cassette decks. But even the first so-called "W" decks with two cassette mechanisms still required separate operation of each unit, and they could only record at "real time", i.e., the standard tape speed of 1-7/8 in. per second. But now AIWA introduces the AD-WX110: the world's first "W" cassette deck that can copy both sides of the tape at double speed. That means you'll be able to copy the entire contents of a 60-minute cassette in 15 minutes. That's fast!



ALL-TRACK Recording: How does it work?

In conventional decks, the cassette must be turned over to record or play back the tracks on each side. This is because the head itself only contains two tracks (one for each stereo channel). The AD-WX110 however employs two special 4-track heads which play and record the entire contents of the cassettes. During A + B Synchro Dubbing, two of these tracks record signals in the conventional manner and two in the reverse direction. When the tape is played back however, only two stereo tracks will be reproduced at one time, in the same manner as standard cassettes.



A choice of three possible dubbing modes:

"Real time" (Normal speed, one side)

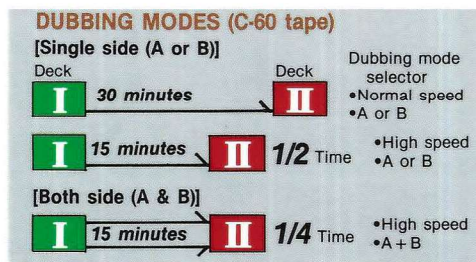
Simply load a recorded tape in Deck I, blank cassette in Deck II; then press the red "Synchro Dubbing" control to start recording. (Real time recording is advised for optimum frequency response.)

"Half time" (Double speed, one side)

After setting SPEED switch to HIGH position, repeat operations as described above. Copy will be completed in half of normal time (i.e., 30-minute tape will be reproduced in 15 minutes).

"Quarter time" (Double speed, both sides)

Set SPEED switch to HIGH and TRACK switch to A + B. When "Synchro Dubbing" control is pressed, Deck II will record material from both sides of tape at double speed. (Entire contents of C-60 cassette will be reproduced in 15 minutes.)



"Convenient Synchro-Dubbing" Control

This completely eliminates the need for separate operation of RECORD, PLAY and PAUSE functions on Decks I and II. Once cassettes have been loaded, dubbing is automatically activated by a single button.

Continuous playback

The AD-WX110 can also play back two tapes in sequence, giving extended playback time. Once the tape in Deck II comes to an end, Deck I will commence play automatically, making possible up to 1-1/2 hours of uninterrupted listening (with two C-90 cassettes).

Dolby B-C* noise reduction

Equipped with Dolby "C" type noise reduction circuitry, the AD-WX110 is capable of an outstanding 76dB signal/noise ratio, with tape hiss almost entirely suppressed. A Dolby "B" position is also provided.

High fidelity recordings ensured

AIWA has built the AD-WX110 to give outstanding sound reproduction. The record/play head in Deck II employs a wide gap for powerful sound with dynamic range; the playback head in Deck I has a narrow 0.7 micron gap to reproduce delicate highs with accuracy. Together they give you the performance of a three-head model plus of course the advantage of two cassettes!

The AD-WX110 also boasts a precision transport mechanism: stable DC servo motors and AIWA's exclusive micro-grain processed capstans minimize tape speed irregularity, making possible a superb 0.05% (WRMS) wow & flutter.

Plus:

- Automatic tape selector (Metal/CrO₂/Normal)
- Music Sensor (one program in Deck II)
- LINE IN connection terminals
- Mic mixing permits insertion of narration, etc. even during dubbing operation
- Timer standby facility
- Rec mute facility
- LED indicators for tape setting, high speed dubbing, Dolby NR
- Auto replay facility



AIWA's Quick Reverse: the auto-reverse that you get back to the music faster

AD-R600U

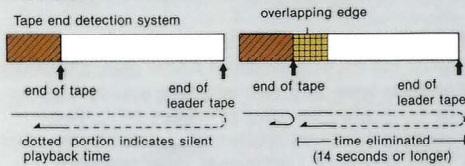
Far superior to 4-track or vertical shift auto reverse units, AIWA's "Quick Reverse" mechanism ensures true bi-directional fidelity.

Get back to the music faster

Tired of waiting? Here's the deck for impatient music lovers. A photoelectric sensor beside the head activates a split-second reverse mechanism at the leader tape edge. Result? You'll be listening to the other side in just four-tenths of a second, instead of having to sit through 12 seconds or longer of silent leader strip.



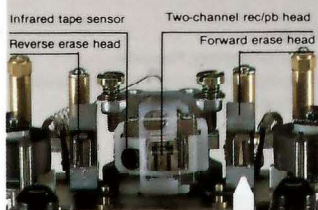
Conventional auto reverse



AD-R600

AIWA's amazing Radial-Pivot head

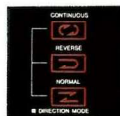
Rotating 180° in sync with the change in tape direction, the durable DX head is locked in an integrated diecast mounting to protect critical azimuth alignment, essential for the AD-R600's wide 20—19,000Hz frequency response. The Radial-Pivot design also ensures that the same left/right channels in the head are employed to record and play back corresponding tracks on the tape, a distinct



advantage over complicated 4-track heads or those employing crude vertical shift mechanisms.

Choice of 3 playback, 2 recording modes

Three LED indicators are provided to display the selected operation mode:

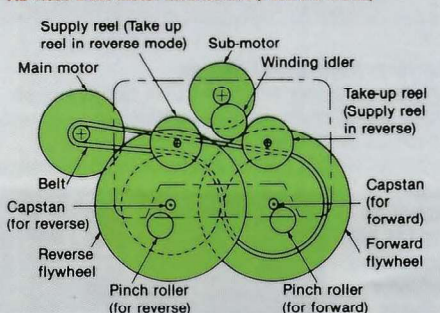


- **Normal:** For record/playback of one side of the tape, as with ordinary non-reverse decks
- **Reverse:** For a single playback or record cycle of both sides of the tape. (However, a tape from which the accidental recording tabs have been removed will be protected in the normal manner.)
- **Continuous:** For continuous uninterrupted playback only of both sides of the tape. Quick Reverse operation can be voided, permitting the unit to reverse when tension is detected at the tape end if so desired.

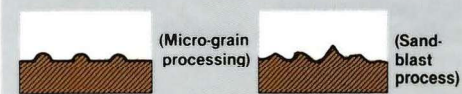
Dual motor drive mechanism

The extraordinarily low figure for wow and flutter—0.035%—reflects AIWA's continuing ingenuity in cassette mechanism design. A high-accuracy DC servo motor ensures stable torque in both directions, and capability to respond almost instantaneously to changes in load. A pair of AIWA's unique "micro-grain" capstans further reinforces mechanical operation. Deluxe "feather-touch" controls feature fail-proof IC logic and are arranged for positive operation at the touch of a finger.

AD-R600 Dual motor mechanism (Forward mode)



Simulated magnification of capstan surface



Dolby C noise reduction

Dolby Laboratories' C-type noise reduction circuitry gives the AD-R600 superb signal/noise performance of 78dB (above 5kHz), an additional 10dB over the older B-type system.

Tuner recording preset level

Here's a great feature for recording programs from FM. Because the modulation levels of FM broadcasts are fixed, this new facility lets you adjust recording input levels without concern over encountering a high-volume passage exceeding the tape's saturation level. TRPL makes recording from your FM tuner quicker and easier than ever before.



Ultra-modern design

A stunning 3-color peak-reading LED display and slide-type record level adjustor provide a clean, functional appearance. Mode selectors, mic and phone jacks, Dolby switch and other controls are concealed behind the handsome hinged panel.



Plus:

- Auto Normal/CrO₂ tape selector
- Smooth oil-damped cassette eject
- Timer standby record/play selector
- Rec mute facility
- LED tape direction indicators
- RC-R200 wireless remote control unit available as an optional accessory



Three-head performance plus Dolby* C noise reduction; a superbly designed high-performance package.

AD-3500U

Equipped with Dolby* C noise reduction circuitry, this exciting 3-head model offers high performance, exotic styling and a host of convenient new features.

DX Record/PB combination head

A cost-effective 3-head design, once just a dream of deck designers, is now a reality. The AIWA DX combination head employs a laminated permalloy and non-magnetic layered construction for high head core linearity, while the guard area is composed of extra-durable sendust. Ideal for metal tapes as well as the more common formulations, the DX head design ensures 3-head performance once believed impossible at the AD-3500's price.



Automatic Demagnetizing System (A.D.M.S.)

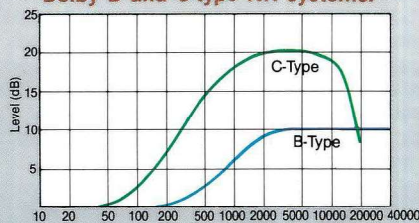
An essential maintenance job on 3-head cassette decks is now performed automatically, every time the unit's power is switched on. AIWA's ADMS circuit, which activates a special built-in oscillator each time the power button is depressed, effectively returns the residual magnetization in the head to zero. Result: no head saturation to mar the sound quality of recordings.



Dolby* C noise reduction system

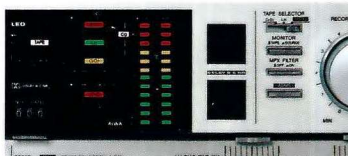
Although many new compander-type noise reduction formats have appeared on the audio scene in recent times, none have come close to achieving the standardization and acceptance of the highly popularized Dolby "B" system. However, with the introduction of high performance CrO₂ and metal tape formulations, a strong demand has developed for a more effective system. The Dolby "C" noise reduction circuitry in the AD-3500 does more than simply reduce tape hiss and residual noise—it also processes signals with incredible fidelity. Thus the superb 79dB signal/noise ratio (Dolby "C" on, Metal tape) only tells half the story; the other half is the starting quality of the music, free from "breathing" noise and other compander problems. To provide effective noise reduction for already recorded tapes, the AD-3500 is also equipped with a separate Dolby "B" switch position.

Comparison of low-level encoding: Dolby B and C-type NR systems.



Esoteric front panel design

An eye-catching array of LEDs display peak input levels from -20 to +10dB, also provide spectacular display of function and mode settings. Neatly placed controls include compact slide adjusters for LH bias fine and output volume levels.

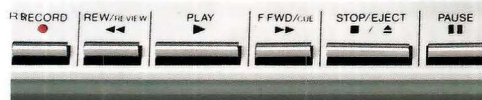


Stable tape transport

A reliable DC servo motor and flat belt for better transmission efficiency combine with AIWA's exclusive micro-grain process capstan for extra transport stability. Low 0.035% (WRMS) wow and flutter ensures that sound reproduction is never marred by mechanical imperfections.

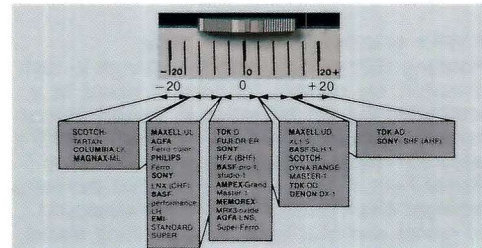
Soft-touch controls

Activated with light finger pressure, the slim bar-style controls provide quick, positive mode switching. Cue and review enable audible monitoring during fast forward and rewinding.



Bias fine adjustor for LH/Normal tapes

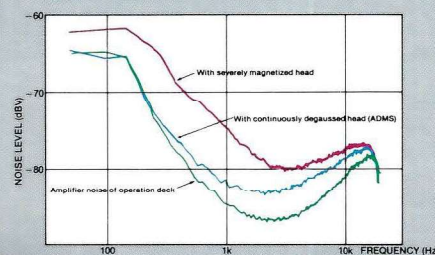
One of the most welcomed AIWA deck standbys, this slide-type adjustor enables you to vary recording bias by plus or minus 20%, thus providing for ideal recording compatibility with a wide range of LH/Normal tape varieties.

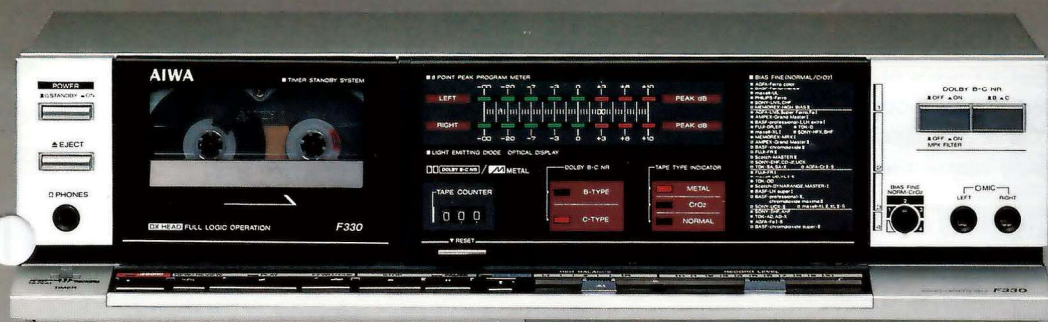


Plus:

- Auto replay facility
- 3-position tape selector switch
- Separately adjustable right, left record volume controls
- Switchable MPX filter
- Front panel mic and headphone jacks
- Timer standby recording and playback

Effect of ADMS operation (Playback noise analysis)





AD-F330



AD-F220

A triumph in human engineering that's priced to please

AD-F330U

Here's a 2-head deck that AIWA's especially proud of: a superbly-styled machine with that "extra" edge in features and performance!

Computer-age styling

The age of computers is here, and AIWA designers have carefully styled their new decks to reflect the importance of better human engineering. Take the all-new flat "keyboard" panel, for example. It's angled so you can operate the deck from above, for easy access and more positive operation. After the first few moments at the controls, you'll agree!

Feather-touch IC logic controls with cue & review

Switching from one mode to another is especially easy, and safe too.

IC controls contain their own "logic" information, making it possible to switch even from Fast Forward to Rewind without concern over damage to tape or mechanism. AIWA's advanced design also gives you cue & review capability—for speedy program location without having to switch out of the PLAY mode.

User-adjustable Bias Fine Control

Now get the best in performance from the tape you want, without worries over bias incompatibility. The AD-F330 gives you a $\pm 20\%$ range of adjustment that makes it easy to "tune in" optimum bias for Normal and CrO₂ type tapes.

Auto Rec-mute

As an aid to editing recordings, Auto Rec-mute

creates a uniform 4-second blank segment on the tape merely by pressing the REC MUTE switch. If longer muting is desired the switch may be held in for as long as required; for muting of less than four seconds, pushing the switch a second time will halt operation.

Plus:

- Functional panel display
- Dolby B/C noise reduction
- Slide-type record level control
- High performance DX head
- Auto tape selector (Metal/CrO₂/Normal)
- Timer standby Record/Playback
- Soft oil-damped cassette eject
- Digital tape counter
- Headphone, stereo mic input jacks

Sophisticated styling + Dolby* C: a true audio value

AD-F220U

Exciting styling, true audio value

Dolby* C noise reduction system

A standard feature in almost every high-performance component deck, AIWA now makes Dolby's C-type noise reduction system more affordable than ever. Dolby C works more effectively, over a wider frequency range, than its predecessor B-type system, and its effect on recordings is amazing: an almost total absence of audible tape hiss, giving the AD-F220 an outstanding signal/noise ratio of 78dB (metal tape/above 5kHz). Dolby C also improves recordings by boosting tape MOL, thus effectively lowering distortion.

Soft-touch controls with cue/review

A new type of "mecha-logic" system requiring

only light finger pressure to operate, the AD-F220's controls are arranged on an angled panel for easy user access. AIWA has also built in cue/review capability, so you'll be able to make quick changes in tape direction to locate the desired tape segment without having to leave the PLAY mode.

Bias Fine adjustor for Normal/CrO₂ tape

No matter what the tape brand, you can easily "fine tune" the AD-F220 for better recording compatibility. Slide-type adjustor lets you vary bias by $\pm 20\%$ to adapt this deck to a wide range of Normal and CrO₂ tapes.

High performance DX head

Designed to guard against problems caused by irregular wear at the head's gap edge, this

unique head construction of laminated hard permalloy chips and extra-tough epoxy resin ensures years of durable performance.

Plus:

- Stable tape mechanism
- "Peak-step" LED display
- Auto replay facility
- Auto tape selector (Normal/CrO₂/Metal)
- Soft oil-damped cassette eject
- Mechanical pause control
- Timer standby (Rec/Pb) mechanism
- Rec-mute control
- Front panel mic/headphone jacks
- Independent L/R channel recording controls
- Digital tape counter
- Recording/Tape/Dolby B/C LED indicators

Audio Accessories

RC-R200



Wireless remote control system for AIWA Cassette Decks

- Line-of-sight infrared wireless operation up to 30 feet away
- Operates all cassette deck tape transport mode controls
- May be used with AD-F990, AD-F770, AD-F660, AD-F330, AD-R600 and other models equipped with IC logic controls

Dimensions:
1-3/16" (W) × 4-3/8" (H) × 9-5/16" (D) (30 × 110 × 235mm)

HP-T10



Stereo headphones

- High-compliance film diaphragm ensures rich low-frequency reproduction
- New 3-layer diaphragm and ultra-lightweight voice coil for clear, accurate highs
- Three-way adjustable "Acoustic Super Loudness" switch for tonal adjustment right on the headset.
- Folding center hinge for easy transport and storage.

FEATURE COMPARISON TABLE

	3 head		2 head		No. of heads	Amorphous Alloy Combination Head	DX Head		Sensidust Guard Head	Transport		Micrograin capstan	2-motor drive	Dolby HX Professional	Dolby C HQ	DATA	Auto reverse	Switchable MPX filter	Rec. mute	Bias line adjustor	Peak display	Auto noise reduction detector	Auto recording level control	Auto Tape-Source selector	ADMS	All-mode remaining tape time display	Intro Play
										Feather touch IC logic	Soft touch																
AD-F990U	●	—	—	●	—	—	—	●	—	—	● (dual)	●	●	—	—	●	—	● (Auto)	—	—	FL, W/Peak hold	●	—	—	—	—	—
AD-F770U	●	—	—	—	(combi)	—	—	●	—	—	● (dual)	●	●	—	—	—	—	● (Auto)	—	—	FL, W/Peak hold	—	—	—	—	—	—
AD-F660U	—	—	—	—	(combi)	—	—	—	—	—	● (dual)	●	●	—	—	—	—	● (Auto)	—	● (Normal/CrO ₂)	12-point LED, W/Peak hold	—	—	—	—	—	—
AD-R600U	—	●	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AD-WX110U	—	●	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	● (Normal)	7-point LED	—	—	—	—	—	—
AD-3500U	●	—	—	—	(combi)	—	—	—	—	—	—	●	—	—	—	—	—	—	—	● (Normal)	12-point LED	—	—	—	—	—	—
AD-F330U	—	●	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	● (Auto)	8-point LED	—	—	—	—	—	—
AD-F220U	—	●	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	● (Normal/CrO ₂)	8-point LED	—	—	—	—	—	—

STEREO CASSETTE DECK SPECIFICATIONS

	AD-F990U	AD-F770U	AD-F660U	AD-R600U	AD-WX110U	AD-3500U	AD-F330U	AD-F220U
POWER CONSUMPTION	40 Watts	33 Watts	26 Watts	25 Watts	25 Watts	17 Watts	16 Watts	13 Watts
POWER SOURCE	AC 120V, 60Hz							
DIMENSIONS	16-9/16(W) × 4-3/8(H) × 11-5/16(D) inches (420 × 110 × 286mm)	16-9/16(W) × 4-3/8(H) × 11-5/16(D) inches (420 × 110 × 286mm)	16-9/16(W) × 4-3/8(H) × 11-5/16(D) inches (420 × 110 × 286mm)	16-9/16(W) × 4-7/8(H) × 12-15/16(D) inches (420 × 123 × 287mm)	13(W) × 4-1/4(H) × 12-1/6(D) inches (330 × 107 × 306mm)	16-9/16(W) × 4-3/8(H) × 11-1/16(D) inches (420 × 110 × 280mm)	16-9/16(W) × 4-3/8(H) × 11-1/16(D) inches (420 × 110 × 283mm)	16-9/16(W) × 4-3/8(H) × 11-5/16(D) inches (420 × 110 × 286mm)
WEIGHT	12.1lbs (5.5kg)	12.1lbs (5.5kg)	12.1lbs (5.5kg)	12.1lbs (5.5kg)	11.5lbs (5.2kg)	8.8lbs (4.0kg)	9.9lbs (4.5kg)	9.3lbs (4.2kg)
TRACK	4-track, 2-channel							
TAPE SPEED	1-7/8ips (4.8cm/sec)							
FREQUENCY RESPONSE								
OVU (Dolby C on)	Normal tape	20 ~ 12,000Hz (±3dB)	20 ~ 11,000Hz (±3dB)	20 ~ 11,000Hz (±3dB)	—	—	—	—
	CrO ₂	20 ~ 15,000Hz (±3dB)	20 ~ 14,000Hz (±3dB)	20 ~ 14,000Hz (±3dB)	—	—	—	—
	Metal tape	20 ~ 18,000Hz (±3dB)	20 ~ 17,000Hz (±3dB)	20 ~ 17,000Hz (±3dB)	—	—	—	—
-20VU	Normal tape	20 ~ 19,000Hz	20 ~ 18,000Hz	20 ~ 18,000Hz	20 ~ 16,000Hz 30 ~ 13,000Hz (+3dB)	20 ~ 16,000Hz 25 ~ 13,000Hz (+3dB)	20 ~ 16,000Hz 25 ~ 13,000Hz (±3dB)	20 ~ 16,000Hz 25 ~ 13,000Hz (+3dB)
	CrO ₂ tape	20 ~ 20,000Hz	20 ~ 19,000Hz	20 ~ 19,000Hz	20 ~ 18,000Hz 30 ~ 15,000Hz (+3dB)	20 ~ 17,000Hz 25 ~ 15,000Hz (+3dB)	20 ~ 17,000Hz 25 ~ 15,000Hz (±3dB)	20 ~ 17,000Hz 25 ~ 15,000Hz (+3dB)
	Metal tape	20 ~ 21,000Hz	20 ~ 20,000Hz	20 ~ 20,000Hz	20 ~ 19,000Hz 30 ~ 17,000Hz (+3dB)	20 ~ 18,000Hz 25 ~ 17,000Hz (+3dB)	20 ~ 18,000Hz 25 ~ 16,000Hz (±3dB)	20 ~ 18,000Hz 25 ~ 16,000Hz (+3dB)
S/N RATIO (Dolby B on) (Dolby C on, above 5kHz)	68dB (Dolby B, Metal) 80dB (Dolby C, Metal)	68dB (Dolby B, Metal) 80dB (Dolby C, Metal)	68dB (Dolby B, Metal) 80dB (Dolby C, Metal)	65dB (Dolby B, Metal) 78dB (Dolby C, Metal)	66dB (Dolby B, Metal) 76dB (Dolby C, Metal)	67dB (Dolby B, Metal) 79dB (Dolby C, Metal)	65dB (Dolby B, Metal) 78dB (Dolby C, Metal)	65dB (Dolby B, Metal) 78dB (Dolby C, Metal)
WOW AND FLUTTER (WRMS)	0.025%	0.025%	0.028%	0.035%	0.05%	0.035%	0.035%	0.038%
FORWARD AND REWIND TIME (C-60 TAPE)	60sec	60sec	70sec	70sec	90sec	90sec	70sec	90sec
CROSSTALK (at 1kHz)	65dB	65dB	65dB	60dB	60dB	65dB	65dB	65dB
CHANNEL SEPARATION (at 1kHz)	45dB	35dB	35dB	35dB	35dB	35dB	30dB	30dB
HEAD	REC/PB: Amorphous alloy Combination Head Erase: Hi-bi double-gap Sendust Head	REC/PB: DX Combination Head (Sendust Guard) Erase: Hi-bi double-gap Sendust Head	REC/PB: DX Combination Head (Sendust Guard) Erase: Hi-bi double-gap Sendust Head	REC/PB: DX Head Erase: Double-gap Ferrite Head	REC/PB: SH Head Erase: Double-gap Ferrite Head × 2	REC/PB: DX Combination Head (Sendust Guard) Erase: Double-gap Ferrite Head	REC/PB: DX Head Erase: Double-gap Ferrite Head	REC/PB: DX Head Erase: Double-gap Ferrite Head
MOTOR	DC servo motor × 1 DC motor × 1	DC servo motor × 1 DC motor × 1	DC servo motor × 1 DC motor × 1	DC servo motor × 1 DC motor × 1	DC servo motor × 2	DC servo motor × 1	DC servo motor × 1 DC motor × 1	DC servo motor × 1
INPUT SENSITIVITY IMPEDANCE	MIC	1.0mV/200 ohms ~ 10k ohms	0.3mV/200 ohms ~ 10k ohms	0.3mV/200 ohms ~ 10k ohms	0.25mV/200 ohms ~ 10k ohms	0.3mV/200 ohms ~ 10k ohms	1.0mV/200 ohms ~ 10k ohms	0.3mV/200 ohms ~ 10k ohms
	LINE IN	50mV/50k ohms						
OUTPUT LEVEL IMPEDANCE	LINE OUT	0.41V/50k ohms or higher	0.41V/50k ohms or higher	0.41V/50k ohms or higher	0.55V/50k ohms	0.41V/50k ohms	0.55V/50k ohms	0.41V/50k ohms
	HEADPHONE	1.5mW/8 ohms	1.5mW/8 ohms	0.4mW/8 ohms 1.5mW/8 ohms	0.8mW/8 ohms	0.8mW/8 ohms	0.8mW/8 ohms	0.8mW/8 ohms

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*Specifications and design are subject to change without notice.

*Please check the laws on copyright relating to recording from discs, radio or external tape for the country in which the machine is being used.

*HX PROFESSIONAL ORIGINATED BY BANG & OLUFSEN

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Printed in Japan 8352040.63N